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BETTER ROADS MEAN BETTER BUSINESS FOR HONOLULU AND ALL TERRITORY

"Permanence" Should be Watchword In Building for Traffic Conditions of the Future

CITY ENGINEER COLLINS POINTS OUT
EACH STREET IS A SPECIAL PROBLEMHis Experience Summed Up in Article Written Especially for
Star-Bulletin's Good Roads Edition—Interesting Figures
on Recent Construction Presented—Study This, TaxpayersBy GEORGE M. COLLINS,
Engineer of the City and County of
Honolulu

The general welfare of a city's people depends almost as much upon having a properly paved street system, as it does in having a pure water supply or an adequate sewer system. While it is true that impure water and proper sewage disposal are first essentials in the growth of a city, it is no less true that a city's future depends very largely upon the character of its streets and highways. These must be well paved, cleaned and maintained, so that the traffic volume of traffic engaged in the daily business of the city may move freely and rapidly, so that pleasure vehicles, carts and wagons of every description, may travel with ease, and so that the pedestrian may proceed in comfort, unobstructed by dust or mud.

The modern requirements for rapid transportation, the constantly increasing load imposed upon our pavements by motor trucks, and the increasing volume of automobile traffic generally, make it imperative that this city wake up to a realization of its present deficiency as far as improved streets are concerned, and proceed as rapidly as possible to remedy the defect.

When we consider the development in motor truck transportation during the past five years, it is hard to form a guess as to the possible character of traffic five years hence. One fact, however, which stands out above all else in this connection is, that the materials used and the methods employed in all future pavement construction must be such as to insure permanence.

It must be understood at the outset that there is no one material which will satisfy all the conditions encountered in the design of street pavements. Each street presents a special problem and the final selection of the material to be used depends upon a large number of variables. The character of the soil or subsoil upon which the pavement is built and which ultimately carries all loads passing over the pavement must be considered.

Drainage Possibilities Important.
The kind of traffic, whether light or heavy, horse-drawn or automobile, its movement and probable future weight and volume must be taken into consideration as the chief essential in the selection. The feature of drainage, not only of all surface waters flowing upon the street, but also underground water which may tend to weaken the subgrade upon which the pavement rests is important. The character of the soil, whether it is pervious and easily drained or a wet, sticky, impervious clay, or taro patch mud which does not admit of practical sub-drainage.

Every detail in fact which has to do with keeping water away from the pavement, both above and beneath, must be carefully studied. The grade of the street upon which the pavement is to be constructed, whether it is flat or steep, has an important bearing on the type selected. The peculiarities of climate and temperature and the availability of materials to be used in reconstruction can not be overlooked.

Two Parts to Pavements.
All of the above factors are unfortunately in many cases subject to the limitations of the amount which the city or the property owner can afford to pay for the improvement.

A pavement is divided essentially into two parts, the foundation and the wearing surface. Very often this division is not justifiable, the pavement being called upon to perform both the functions of foundation and wearing surface, as, for example, the case of a plain concrete road which carries no bituminous covering. The ideal pavement, however, has this distinct division, inasmuch as the duty of each part is entirely different and can not be efficiently satisfied by any one material.

Concrete Best Foundation.
The real foundation of a pavement is the earth upon which it is placed. All loads are transmitted to it and if there is a lack of firmness or natural strength an artificial foundation must be supplied of such a character as to permanently compensate for all weaknesses in the subgrade, due consideration being given to the weight and volume of traffic upon the street.

Concrete forms the best artificial foundation known at the present time, and unless there is an excellent natural foundation no other material should be substituted for it in the construction of a street pavement which is to carry a large volume of traffic. The thickness of the concrete base depends largely upon the amount of traffic to be supported and the nature of the earth foundation.

Crushed rock as a base for light traffic streets in the residence districts is a satisfactory and economical material, provided the subgrade is satisfactory. This type of foundation is to be recommended on certain residential streets carrying a limited number of vehicles daily.

The wearing course of a pavement is the surface layer of material which

takes the wear and impact of traffic. The ideal wearing surface must be compact and elastic, and must possess sufficient inherent stability to stand up under the weight of traffic without deformation. Many surfaces, such as brick, cobble and vitrified brick pavers, are the most stable, but are not very lasting in the future of a city. Bituminous surfaces on the other hand possess the quality of elasticity, but lack stability under heavy loads. The selection is one which depends upon the nature of the subgrade, the character of the money available for construction.

Several Kinds of Surface Mixtures.
A type of permanent surface which has proved satisfactory in general practice throughout the states and to a limited extent in Honolulu consists of bituminous concrete. This type of surface is in this city being the patented "bituthic" pavement. This type is far superior to our common asphalt and oil macadam and is much more expensive. The "Toneka Specifications" pavement is another bituminous concrete mixture which avoids the "bituthic" patents. It has proved quite successful in many cities on the coast and on portions of the California state highway. Both pavements are made by mixing hot rock, properly graded and proportioned with fluid asphalt. The hot mixture is applied to the street at a temperature of about 250 degrees Fahrenheit and rolled compactly. This method of "hot mixing" is superior to that commonly used in Honolulu in the construction of asphalt macadam, by which the asphalt is poured upon the rock spread and rolled into upon the street. In "hot mixing" the rock is so graded as to reduce voids to a minimum and each particle of stone is thoroughly coated with the asphalt binder. Such a method is more scientific and less subject to the large personal equation involved under the "penetration" method.

Sheet asphalt, another pavement common to many cities, is composed of a hot mixture of asphalt and well graded sharp sand. It would hardly be practical to consider this type for Honolulu, as it would be necessary to import sand, the local coral sands being altogether unfit for use in this construction.

Sequestered Asphalt Not Permanent.
The "sequestered" asphalt wearing surface is a makeshift which has been devised to save a concrete road from wear without the expenditure of money necessary for a permanent surface material. The life of the "sequestered" surface is not more than two years and the greatest care must be observed in placing it. As the name suggests it is applied to the surface of the road in one or two coats by a mechanical atomizer or pressure distributor or by hand with squeegee. Stone screenings are spread upon the asphalt or road oil, as the case may be, in sufficient quantity to absorb it, giving a thickness to the surface of approximately one-quarter of an inch. This type of wearing surface can not be classed as a permanent one. It is subject to continual maintenance.

Other types of permanent surfaces which may be considered for certain streets in Honolulu are wood blocks.

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"On The Beach at Waikiki" Made Easy By Modern Concrete Highway



Kalaka'ua avenue is today Honolulu's most striking example of civic awakening. For years this main-traveled thoroughfare was an unspeakable disgrace—dusty in dry weather and a sea of mud in wet, filled with holes, a terror to motorists and to pedestrians. Various half-hearted attempts were made to fix it. Many were the temporary improvements made. Then finally the property owners, realizing the need of spending money to get a real up-to-date street, united under the frontage-tax plan and soon a fine concrete boulevard was being constructed. While it is in progress the Rapid Transit Company is double-tracking. When the improvements are completed, this great boulevard leading to the famous beach will play a modern surprise. In the photograph above, three interesting phases are shown. On the left is the completed half of the concrete highway, now open to traffic. In the center is the double-tracking work of the Rapid Transit, with a big gang of men busy, and on the right is the old, uneven, unpaved road—a marked contrast to the clean and smooth paving on the left. The Kalaka'ua avenue improvement is being done by the Spalding Construction Company and constitutes one of the largest city improvements in years.

SPECIAL TAX SHOULD BE SET ASIDE
IN TWO ROAD FUNDS, URGES MAYORJohn C. Lane Voices Views in Signed Statement Upholding
Good Roads Principles—Declares All Money for Highways
Should Be Guaranteed Against Use for Other PurposesBy JOHN C. LANE
Mayor of the City and County of
Honolulu

The character of the city's people is manifested in the appearance of its streets and highways, its public buildings and other improvements. There may be many good and sufficient reasons why this statement does not apply to Honolulu. If there are any, I have failed to discover them. This city has, without doubt, been greatly handicapped in many ways. Our isolated position, the cosmopolitan nature of our people, the lack of the proper quality and quantity of public spirit, have all offered their share of resistance to the more rapid advancement of the community. The time has come, however, when all obstacles must be surmounted, and a plan evolved which will bring about big improvements; extensions to our water and sewer systems and up-to-date roads and pavements.

MUST RECONSTRUCT ROAD SYSTEM.
Our road system must be reconstructed along modern lines in order to carry the increased volume of automobile traffic. We have not kept pace with the change in traffic conditions and as a result the type of road construction which was well suited to horse-drawn traffic has proven altogether inadequate to maintain. Holes appear faster than the Road Department is able to repair them. The tourist is disappointed and complains. The condition of roads and streets seems to be growing worse day by day.

The remedy lies in reconstruction, together with well organized maintenance. We can not hope for either until increased funds are made available. We can not expect the money until the people of the city take a united interest in Good Roads, and demand them.

NEAT HOMES FOLLOW GOOD ROADS.

The benefits of good roads and well paved streets are many. The direct benefit applies to the people who use them. There is also a large indirect benefit to the entire citizenship regardless of whether they live in the city and in the country; regardless of whether they drive a pleasure car or wagon or walk the streets of a tenement district. As an example of the transformation wrought by the construction of good roads and as a reminder of the general benefits resulting from street improvements, we have the Auwailimu district. We all know the conditions which existed



Mayor John C. Lane, Honolulu

on the slopes of Punchbowl before a modern street system was laid out. There were squalid houses and filthy, dirty lanes and alleys; poorly kept homes and a lack of proper sanitation. Now we have a district of neat homes and beautiful residences. Every owner takes pride in the appearance of his home; gardens and trees and attractive houses have taken the place of unsightly shacks. The owners have more pride in their personal appearance and in the welfare of their children.

They have become better citizens. **WOULD DECREASE COST OF LIVING.**

Good roads are a general benefit to every one in reducing the cost of commodities delivered over them. The delivery of goods and all material over good roads makes higher cost at the point of delivery. Good roads reduce the cost of operating automobiles and motor trucks by decreasing the consumption of gasoline, wear on tires and the amount of repairs.

Good roads and clean up-to-date street pavements increase the public health, by the elimination of the dust nuisance. They increase community comfort and make better citizens.

POINTS INVOLVED IN PROBLEM.
The benefits of good roads are generally recognized, and if it were necessary only to prove this feature we

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HARBIN DRAG IS
SUGGESTED FOR
ROADS ON OAHUVeteran Vulcanizer, J. W.
Kershner, Tells of Use in
Mainland States

"Have you any decided opinion concerning the securing of good roads for these islands?" James W. Kershner, the veteran vulcanizer, was asked.

"I certainly have," he answered. Mr. Kershner amplified his initial statement with a description of road-making and road maintenance in effect throughout all the middle western states, where conditions were formerly worse than they are on Oahu.

The Harbin drag—a contrivance which sweeps all debris to the drainage ditches and helps to form a crown for the road—is used in these states with good results, even on the gumbo roads. Sectional road keepers sweep the roads in their sections with these drags during and immediately after storms, and the result is that damage is instantly effected by the prompt work. At the same time that the drag clears the roads of debris it fills in holes and washouts in the road leaving it with a clean and even surface.

"Some novel methods are used to get interest in the work by the sectional road keepers. Offers of prizes and special mention in road reports are especially effective. Boxes for comments upon different sections of the roads are placed in convenient spots along the road where criticisms and compliments of the section may be written and mailed by whoever is so prompted. As the comments are made, good and bad, by cross-country travelers from all parts of the United States, as well as by local residents, the complimentary comments are much treasured by the sectional road overseers, who are usually farmers residing in the district."

Kershner believes that the Harbin drag could be used with excellent results on the white coral roads of Oahu and that the cost would be comparatively slight, as compared with ordinary maintenance in the territory. He also favors some kind of award system for the cantoniers on the different sections of island roads, when by attention to their duties they earn special mention.

The vulcanizer particularly speaks of the coral road from Kalaka'ua avenue to Waialae, now in bad condition, as a stretch of road where the drag would be useful.

ASK ANY DEALER.
Paradoxical thought it may seem, nearly all cranks are self-starters. American Motorist.

Good Roads Are Good Business
Says Head of PromotionistsEmil A. Berndt Points Out Definite Assets to Community in
Highways That Attract Visitors and Satisfy ResidentsBy EMIL A. BERNDT
Chairman, Hawaii Promotion
Committee

From a purely business standpoint, which includes that of promotion, the continued bettering of roads in the community, and with particular reference to Honolulu, is a municipal asset and community advantage.

From a business viewpoint, the community of Honolulu, with a better road system or good roads in general, disarms criticism as to lack of that factor in community upbuilding, and immediately creates in the minds of the visitor a settled feeling of complacency and comfort which induces him to communicate his favorable opinion to other communities. This cannot but have a beneficial effect for the mere knowledge that Honolulu has good roads will induce people abroad to come here to reside. Every human unit added to our community from abroad as a permanent resident adds so much to our community enlargement, and gives us the feeling that after all the "hundred thousand population figure" which we set a few years ago will be easily realized.

GOOD ROADS CUT BUSINESS COST.

All this means an increased income of taxes, an increased volume of business, both of land and sea, and the addition of business factors which would give Honolulu, in the world of industry, a higher place.

The mere facilitating of transportation cuts down the cost of conducting a business. We all remember the old days of delivery to Waikiki and the length of time required for a passenger to go from Honolulu proper to Waikiki. By the installation of improved transportation facilities, the time between these two points has been cut down two-thirds. It is much the same on the roads. The automobile has materially cut down the time for delivery and a resultant decrease in expense to the business house. Better roadways materially aid in solving this problem.

TWO "TOURIST" ROADS COMPARED.

As an example of what good roads means in a community and in creating popularity as between two highways, may be judged from the road which connects Kaimuki with Koko Head, and the road which connects Honolulu with Haleiwa.

The first named location has not a real road, as it is broken down through stress of elements and neglect and is only used by those whose business absolutely requires them to go

over it. On the other hand the second location is one of the most popular roadways in the island and is used by thousands of vehicles, the distance from Honolulu to Haleiwa being covered in almost less time than the much shorter distance between Kaimuki and Koko Head. The latter point is picturesque and the entire panorama of the island would be popular with visitors if there was a road equal to that connecting Honolulu and Haleiwa.

GOOD ROADS DEVELOP COMMUNITIES.

Another illustration may be taken from the fact that another beautiful section of our island is the district of Waimanalo, but it is safe to say that only one out of five hundred visitors ever make the trip into that region, simply because the road is merely one of utility, and not for pleasure, or even for opening up opportunities to build up that section of the island. Many small towns which have a connecting good-roads link, develop more rapidly in civic, social and commercial life than others not so blessed, and a better community spirit is created and opportunities for health, betterment and happiness are created. It means also retention of friendships which had roads do not stimulate.

Take Manoa Valley, for instance, where the residents decided that the entire system of their roads shall be rebuilt on a permanent basis. With the commencement of reconstruction work, property values immediately rose and in some parts property had been held at thirteen and fourteen cents per square foot, the value rose from twenty-five to thirty cents per square foot, while a number of unused lots were bought and have been built upon even before the roads are completed. This is evidence of civic pride and responsibility, and a result of good roads movement is, therefore, shown conclusively in Manoa Valley.

MILITARY NEED FOR GOOD ROADS.

The moment that there seemed to be sudden movement in military preparedness on the part of the United States, there was reflection in the island of Oahu, particularly, the impression that better and a larger area of permanent roads was absolutely necessary for the proper and rapid movement of troops from one point to another. Even today the military are without proper roadways in some parts of the island for the quick shifting of troops, while in the matter of

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